

REMARKS

Claims 2-16 and 18-25 are pending. Claims 1 and 17 have been cancelled herein. Claims 2, 7, 9, 18, 23 and 25 have been amended. Claims 2 and 18 have been amended to include the limitations of their respective base claims 1 and 17. Claims 7, 9, 23 and 25 have been amended to adjust antecedent basis based on the cancelling of claims 1 and 17.

Applicants' Response to the Claim Rejections under 35 U.S.C. §112

Claims 3, 11 and 19 are rejected under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. The Office maintains that the term "pivotal characteristic" is not defined in the claims or specification so as to render its meaning definite, and interprets the term to mean "any noticeable characteristic." Applicants respectfully traverse.

Applicants note that page 10, lines 10-15 and Fig. 1 describe the first test pattern 1 as showing "the pivotal characteristic," exemplified by a line and space pattern having a dimensional ratio of 1:1. Further, Experiment 1 at pages 13-14 and Fig. 4A teach that "the pivotal characteristic" of the first test resist pattern shows variation in width based on variation in exposure energy. Hence, the term "pivotal characteristic" is that of a first test resist pattern wherein variation in width "depends on variation in exposure energy, but scarcely depends on the focal variation and remains almost constant."

As such, applicants respectfully submit that the term "pivotal characteristic" is definite based on the teachings of the specification. Further, when taken in context with the base claims

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of claims 3, 11 and 19; namely, claims 2, 10 and 18, respectively, one of skill in the art would readily understand the pivotal characteristic as set forth therein. As such, applicants respectfully submit that the claims are definite.

Applicants' Response to the Claim Rejections under 35 U.S.C. §102

Claims 1-6 and 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Masayuki in JP Publication 11-307431. In response thereto, applicants have amended claim 2 to incorporate the limitations of claim 1. In response to the rejection of amended claim 2 and independent claim 10, applicants respectfully traverse on the basis that not all the limitations of the claim are set forth in the prior art.

Specifically, Masayuki does not teach calculating an exposure energy based on the first shape value of the first test pattern and calculating a focal variation of the transfer target based on the second shape value and the exposure energy as required by amended claim 2.

In regard to independent claim 10, the last element of the claim requires a focal calculating unit for calculating focal variation based on the measured second shape value and exposure energy. Similar to the remarks above in regard to claim 2, Masayuki does not teach the limitation of calculating the focal variation based on exposure energy and the second test pattern measurement.

The Office cites to the disclosure in claim 1 of Masayuki as teaching the limitations of applicants' claim 2, second element. As set forth in claim 1 of Masayuki a first management exposure pattern and a second management exposure pattern are formed in a first step. In a

second step, the wiring widths of the first and second circuit patterns are measured. In the third step, the amount of fluctuation of a focal location is detected based on the difference of the wire width of each circuit pattern. The fourth step detects the amount of fluctuation of light exposure based on the difference of the wiring width of at least the first or second circuit pattern, and a wiring width which should be exposed. This process is not the process set forth in applicant's claim 2 and 10.

Specifically, as illustrated in Fig. 3 of the current invention, first the pivotal characteristic (as described above in response to the §112 rejection) of the first exposure pattern is measured S1. Next, a first data base (which stores information which expresses relations between the preliminary-accumulated shape values of the resist pattern having the pivotal characteristic and the exposure energy) is accessed using the measured value S2. Third, the exposure energy is calculated based on the data base and the measurement S3. Forth, the shape value of the second test pattern is measured S4. A second database (which stores information which expresses the relation of the preliminary-stored shape values of the isolated pattern and the exposure energy with the focal variation) is accessed based on the measured results S5 and the focal variation is determined using the proper exposure energy calculated from the first test resist pattern S6. See page 12, line 3 to page 13, line 7 of the specification. Applicants' claims 2 and 10 encompass and recite calculating a proper exposure energy based on the first shape value S3, and calculating a focal variation based on the second shape value and the calculated exposure energy S5 and S6.

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Masayuki may teach comparing the first pattern width to the second pattern width to determine a focal variation, but there is no teachings of using the first denser pattern to find the exposure energy and then calculate a focal variation based on the exposure energy and the shape measurement of the second test pattern. As such, the teachings of Masayuki do not include each and every limitation of claims 2 and 10.

Applicants' Response to the Claim Rejections under 35 U.S.C. §103

Claims 7, 8, 15 and 16 are rejected under 35 U.S.C. 103(b) as being unpatentable over Masayuki in JP Publication 11-307431 in view of Nishi JP Patent # 62-160723. As these claims depend from independent amended claim 2 and claim 10, by addressing the rejection of the parent claims, as discussed above, applicants submit that the current rejection is addressed based on the claims' dependencies.

Claims 17-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masayuki in JP Publication 11-307431 in view of Ausschnitt et al. U.S. Patent # 6,027,842. As noted above, applicants have included the limitations of claim 17 into claim 18. Similar to above in regard to claims 2 and 10, claim 18 requires measuring a first shape value of the first test resist pattern, calculating a proper exposure energy based on the first shape value, measuring a second shape value of the second test resist pattern, and calculating the focal variation of the transfer target based on the second shape value and the proper exposure energy. For the identical reasons explained above in response to the rejection of claims 2 and 18, applicants respectfully traverse. Namely, Masayuki does not teach applicants' process as set forth in Fig. 3 and detailed claims 2,

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10 and 18, but a completely different process wherein the first and second test patterns are directly compared. As such, the combination of Masayuki and Ausschnitt does not teach all the limitations of the claimed invention.

Claims 23 and 24 are rejected under 35 U.S.C. 103(a) being unpatentable over Masayuki in JP Publication 11-307431 in view of Ausschnitt et al. U.S. Patent # 6,027,842 and further in view Nishi JP Patent # 62-160723. As these claims depend from independent claim 17, by addressing the rejection of the parent claim, as described above, applicants respectfully submit that the present rejection is likewise addressed based on the claims' dependencies.

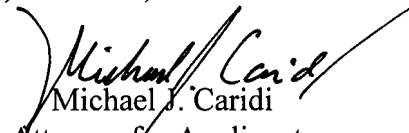
In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,
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